



SEQUENCE LISTING

#4
RECEIVED
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TECH CENTER 1600/2900

<110> Hong, Jin
Tang, Roderick
Li, Shengqiang
Bryant, Martin

<120> Recombinant RSV Virus Expression Systems and Vaccines

<130> 7682-052-999

<140> 09/724,416

<141> 2000-11-28

<150> 60/060,153

<151> 1997-09-26

<150> 09/161,122

<151> 1998-09-25

<150> 09/368,076

<151> 1999-08-03

<150> 60/084,133

<151> 1998-05-01

<150> 60/089,207

<151> 1998-06-12

<160> 66

<170> PatentIn version 3.0

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Leu	Met	Cys	Ser	Met	Gln	His	Pro	Pro	Ser	Trp	Leu	Ile	His	Trp	Phe	
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Glu	Val	Lys	Asn	His	Gly	Phe	Thr	Leu	Ile	Asp	Asn	Gln	Thr	Leu	Ser	
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Gly	Phe	Gln	Phe	Ile	Leu	Asn	Gln	Tyr	Gly	Cys	Ile	Val	Tyr	His	Lys	
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Glu	Leu	Lys	Arg	Ile	Thr	Val	Thr	Thr	Tyr	Asn	Gln	Phe	Leu	Thr	Trp	
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Lys	Asp	Ile	Ser	Leu	Ser	Arg	Leu	Asn	Val	Cys	Leu	Ile	Thr	Trp	Ile	
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	515						520					525				
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Ile	Pro	His	Val	Thr	Ile	Ile	Cys	Thr	Tyr	Arg	His	Ala	Pro	Pro	Tyr	740	745	750	
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Lys	Phe	Ser	Ile	Thr	Ala	Leu	Ile	Asn	Gly	Asp	Asn	Gln	Ser	Ile	Asp	805	810	815	
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Asp	Met	Gln	Phe	Met	Ser	Lys	Thr	Ile	Gln	His	Asn	Gly	Val	Tyr	Tyr	865	870	875	880
Pro	Ala	Ser	Ile	Lys	Lys	Val	Leu	Arg	Val	Gly	Pro	Trp	Ile	Asn	Thr	885	890	895	
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Gln	Glu	Leu	Glu	Tyr	Arg	Gly	Glu	Ser	Leu	Leu	Cys	Ser	Leu	Ile	Phe	915	920	925	
Arg	Asn	Val	Trp	Leu	Tyr	Asn	Gln	Ile	Ala	Leu	Gln	Leu	Lys	Asn	His	930	935	940	
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His	Leu	Lys	Thr	Phe	Phe	Asn	Leu	Asp	Asn	Ile	Asp	Thr	Ala	Leu	Thr	965	970	975	
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Thr	Cys	Ile	Ile	Thr	Phe	Asp	Lys	Asn	Pro	Asn	Ala	Glu	Phe	Val	Thr	1045	1050	1055	
Leu	Met	Arg	Asp	Pro	Gln	Ala	Leu	Gly	Ser	Glu	Arg	Gln	Ala	Lys	Ile	1060	1065	1070	
Thr	Ser	Glu	Ile	Asn	Arg	Leu	Ala	Val	Thr	Glu	Val	Leu	Ser	Thr	Ala	1075	1080	1085	

Pro	Asn	Lys	Ile	Phe	Ser	Lys	Ser	Ala	Gln	His	Tyr	Thr	Thr	Thr	Glu	
1090						1095				1100						
Ile	Asp	Leu	Asn	Asp	Ile	Met	Gln	Asn	Ile	Glu	Pro	Thr	Tyr	Pro	His	
1105			1110						1115						1120	
Gly	Leu	Arg	Val	Val	Tyr	Glu	Ser	Leu	Pro	Phe	Tyr	Lys	Ala	Glu	Lys	
			1125						1130						1135	
Ile	Val	Asn	Leu	Ile	Ser	Gly	Thr	Lys	Ser	Ile	Thr	Asn	Ile	Leu	Glu	
		1140						1145					1150			
Lys	Thr	Ser	Ala	Ile	Asp	Leu	Thr	Asp	Ile	Asp	Arg	Ala	Thr	Glu	Met	
		1155					1160					1165				
Met	Arg	Lys	Asn	Ile	Thr	Leu	Leu	Ile	Arg	Ile	Leu	Pro	Leu	Asp	Cys	
1170						1175				1180						
Asn	Arg	Asp	Lys	Arg	Glu	Ile	Leu	Ser	Met	Glu	Asn	Leu	Ser	Ile	Thr	
1185				1190						1195					1200	
Glu	Leu	Ser	Lys	Tyr	Val	Arg	Glu	Arg	Ser	Trp	Ser	Leu	Ser	Asn	Ile	
			1205						1210						1215	
Val	Gly	Val	Thr	Ser	Pro	Ser	Ile	Met	Tyr	Thr	Met	Asp	Ile	Lys	Tyr	
			1220					1225					1230			
Thr	Thr	Ser	Thr	Ile	Ser	Ser	Gly	Ile	Ile	Ile	Glu	Lys	Tyr	Asn	Val	
		1235					1240						1245			
Asn	Ser	Leu	Thr	Arg	Gly	Glu	Arg	Gly	Pro	Thr	Lys	Pro	Trp	Val	Gly	
		1250				1255					1260					
Ser	Ser	Thr	Gln	Glu	Lys	Lys	Thr	Met	Pro	Val	Tyr	Asn	Arg	Gln	Val	
1265				1270						1275					1280	
Leu	Thr	Lys	Lys	Gln	Arg	Asp	Gln	Ile	Asp	Leu	Leu	Ala	Lys	Leu	Asp	
			1285						1290						1295	
Trp	Val	Tyr	Ala	Ser	Ile	Asp	Asn	Lys	Asp	Glu	Phe	Met	Glu	Glu	Leu	
			1300					1305					1310			
Ser	Ile	Gly	Thr	Leu	Gly	Leu	Thr	Tyr	Glu	Lys	Ala	Lys	Lys	Leu	Phe	
		1315					1320					1325				
Pro	Gln	Tyr	Leu	Ser	Val	Asn	Tyr	Leu	His	Arg	Leu	Thr	Val	Ser	Ser	
		1330				1335					1340					
Arg	Pro	Cys	Glu	Phe	Pro	Ala	Ser	Ile	Pro	Ala	Tyr	Arg	Thr	Thr	Asn	
1345				1350						1355					1360	
Tyr	His	Phe	Asp	Thr	Ser	Pro	Ile	Asn	Arg	Ile	Leu	Thr	Glu	Lys	Tyr	
			1365						1370						1375	
Gly	Asp	Glu	Asp	Ile	Asp	Ile	Val	Phe	Gln	Asn	Cys	Ile	Ser	Phe	Gly	
			1380					1385					1390			
Leu	Ser	Leu	Met	Ser	Val	Val	Glu	Gln	Phe	Thr	Asn	Val	Cys	Pro	Asn	
		1395					1400					1405				
Arg	Ile	Ile	Leu	Ile	Pro	Lys	Leu	Asn	Glu	Ile	His	Leu	Met	Lys	Pro	
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Pro	Ile	Phe	Thr	Gly	Asp	Val	Asp	Ile	His	Lys	Leu	Lys	Gln	Val	Ile	
1425				1430						1435					1440	
Gln	Lys	Gln	His	Met	Phe	Leu	Pro	Asp	Lys	Ile	Ser	Leu	Thr	Gln	Tyr	
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Val	Glu	Leu	Phe	Leu	Ser	Asn	Lys	Thr	Leu	Lys	Ser	Gly	Ser	His	Val	
			1460					1465					1470			
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		1475					1480					1485				
Thr	Tyr	Ile	Leu	Ser	Thr	Asn	Leu	Ala	Gly	His	Trp	Ile	Leu	Ile	Ile	
		1490				1495						1500				
Gln	Leu	Met	Lys	Asp	Ser	Lys	Gly	Ile	Phe	Glu	Lys	Asp	Trp	Gly	Glu	
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Gly	Tyr	Ile	Thr	Asp	His	Met	Phe	Ile	Asn	Leu	Lys	Val	Phe	Phe	Asn	
			1525						1530						1535	
Ala	Tyr	Lys	Thr	Tyr	Leu	Leu	Cys	Phe	His	Lys	Gly	Tyr	Gly	Lys	Ala	
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Lys	Leu	Glu	Cys	Asp	Met	Asn	Thr	Ser	Asp	Leu	Leu	Cys	Val	Leu	Glu	1555	1560	1565
Leu	Ile	Asp	Ser	Ser	Tyr	Trp	Lys	Ser	Met	Ser	Lys	Val	Phe	Leu	Glu	1570	1575	1580
Gln	Lys	Val	Ile	Lys	Tyr	Ile	Leu	Ser	Gln	Asp	Ala	Ser	Leu	His	Arg	1585	1590	1595
Val	Lys	Gly	Cys	His	Ser	Phe	Lys	Leu	Trp	Phe	Leu	Lys	Arg	Leu	Asn	1605	1610	1615
Val	Ala	Glu	Phe	Thr	Val	Cys	Pro	Trp	Val	Val	Asn	Ile	Asp	Tyr	His	1620	1625	1630
Pro	Thr	His	Met	Lys	Ala	Ile	Leu	Thr	Tyr	Ile	Asp	Leu	Val	Arg	Met	1635	1640	1645
Gly	Leu	Ile	Asn	Ile	Asp	Arg	Ile	His	Ile	Lys	Asn	Lys	His	Lys	Phe	1650	1655	1660
Asn	Asp	Glu	Phe	Tyr	Thr	Ser	Asn	Leu	Phe	Tyr	Ile	Asn	Tyr	Asn	Phe	1665	1670	1675
Ser	Asp	Asn	Thr	His	Leu	Leu	Thr	Lys	His	Ile	Arg	Ile	Ala	Asn	Ser	1685	1690	1695
Glu	Leu	Glu	Asn	Asn	Tyr	Asn	Lys	Leu	Tyr	His	Pro	Thr	Pro	Glu	Thr	1700	1705	1710
Leu	Glu	Asn	Ile	Leu	Ala	Asn	Pro	Ile	Lys	Ser	Asn	Asp	Lys	Lys	Thr	1715	1720	1725
Leu	Asn	Asp	Tyr	Cys	Ile	Gly	Lys	Asn	Val	Asp	Ser	Ile	Met	Leu	Pro	1730	1735	1740
Leu	Leu	Ser	Asn	Lys	Lys	Leu	Ile	Lys	Ser	Ser	Ala	Met	Ile	Arg	Thr	1745	1750	1755
Asn	Tyr	Ser	Lys	Gln	Asp	Leu	Tyr	Asn	Leu	Phe	Pro	Met	Val	Val	Ile	1765	1770	1775
Asp	Arg	Ile	Ile	Asp	His	Ser	Gly	Asn	Thr	Ala	Lys	Ser	Asn	Gln	Leu	1780	1785	1790
Tyr	Thr	Thr	Ser	His	Gln	Ile	Ser	Leu	Val	His	Asn	Ser	Thr	Ser		1795	1800	1805
Leu	Tyr	Cys	Met	Leu	Pro	Trp	His	His	Ile	Asn	Arg	Phe	Asn	Phe	Val	1810	1815	1820
Phe	Ser	Ser	Thr	Gly	Cys	Lys	Ile	Ser	Ile	Glu	Tyr	Ile	Leu	Lys	Asp	1825	1830	1835
Leu	Lys	Ile	Lys	Asp	Pro	Asn	Cys	Ile	Ala	Phe	Ile	Gly	Glu	Gly	Ala	1845	1850	1855
Gly	Asn	Leu	Leu	Arg	Thr	Val	Val	Glu	Leu	His	Pro	Asp	Ile	Arg		1860	1865	1870
Tyr	Ile	Tyr	Arg	Ser	Leu	Lys	Asp	Cys	Asn	Asp	His	Ser	Leu	Pro	Ile	1875	1880	1885
Glu	Phe	Leu	Arg	Leu	Tyr	Asn	Gly	His	Ile	Asn	Ile	Asp	Tyr	Gly	Glu	1890	1895	1900
Asn	Leu	Thr	Ile	Pro	Ala	Thr	Asp	Ala	Thr	Asn	Asn	Ile	His	Trp	Ser	1905	1910	1915
Tyr	Leu	His	Ile	Lys	Phe	Ala	Glu	Pro	Ile	Ser	Leu	Phe	Val	Cys	Asp	1925	1930	1935
Ala	Glu	Leu	Ser	Val	Thr	Val	Asn	Trp	Ser	Lys	Ile	Ile	Ile	Glu	Trp	1940	1945	1950
Ser	Lys	His	Val	Arg	Lys	Cys	Lys	Tyr	Cys	Ser	Ser	Val	Asn	Lys	Cys	1955	1960	1965
Met	Leu	Ile	Val	Lys	Tyr	His	Ala	Gln	Asp	Asp	Ile	Asp	Phe	Lys	Leu	1970	1975	1980
Asp	Asn	Ile	Thr	Ile	Leu	Lys	Thr	Tyr	Val	Cys	Leu	Gly	Ser	Lys	Leu	1985	1990	1995
Lys	Gly	Ser	Glu	Val	Tyr	Leu	Val	Leu	Thr	Ile	Gly	Pro	Ala	Asn	Ile	2005	2010	2015

Phe Pro Val Phe Asn Val Val Gln Asn Ala Lys Leu Ile Leu Ser Arg
 2020 2025 2030
 Thr Lys Asn Phe Ile Met Pro Lys Lys Ala Asp Lys Glu Ser Ile Asp
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 Ala Asn Ile Lys Ser Leu Ile Pro Phe Leu Cys Tyr Pro Ile Thr Lys
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 Lys Gly Ile Asn Thr Ala Leu Ser Lys Leu Lys Ser Val Val Ser Gly
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 Asp Ile Leu Ser Tyr Ser Ile Ala Gly Arg Asn Glu Val Phe Ser Asn
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 2100 2105 2110
 Val Leu Asn Phe Arg Ser Thr Glu Leu Asn Tyr Asn His Leu Tyr Met
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 Val Glu Ser Thr Tyr Pro Tyr Leu Ser Glu Leu Leu Asn Ser Leu Thr
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